

In the Claims

1. **(Currently Amended)** A system to optimize resource planning for digital subscriber line (DSL) services, comprising:

a network management system (NMS) in communication with a DSL network; and

a computing application, said computing application operating on said network management system capable of allocating, tracking, and managing deterministic resource configuration variables used to create virtual connections on said DSL network;

wherein the NMS uses the deterministic configuration variables to reanimate hung virtual connections; and

wherein the NMS communicates information indicative of said hung virtual connections to the DSL network such that the DSL network can reanimate the hung virtual connections, the NMS calculating the deterministic variables using the computing application to ascertain the connection positions of the virtual connections on the DSL network, the connection positions ascertainable due to assigned values for unique deterministic variable combinations that identify each established virtual connection.

2. **(Previously Presented)** The system recited in claim 1, wherein said virtual connection is a virtual circuit and said deterministic resource configuration variables comprise a virtual circuit identifier (VCI) configuration variable.

3. (Previously Presented) The system recited in claim 2, wherein said VCI configuration variable is calculated by said computing application using at least one algorithm, said at least one algorithm employing configuration values of DSL network components to calculate said VCI configuration variable.

4. (Previously Presented) The system as recited in claim 3, wherein the configuration values of the DSL network components comprise any of the following: a port position of cooperating remote access multiplexers (RAM) of said DSL network, a port position of central office digital subscriber line access multiplexer (CODLSAM) of said DSL network, a connection position of said cooperating RAMS on said DSL network, and a DSL network capacity parameter.

5. (Previously Presented) The system recited in claim 4, wherein said DSL network capacity parameter is determined from a range of allowable VCI values allocated on the DSL network at any one given time.

6. (Previously Presented) The system as recited in claim 5, wherein said DSL network capacity parameter is determined using VCI values in a range from 33 to 1023.

7. (Currently Amended) The system as recited in claim 4, wherein said NMS cooperates with said DSL network using an element management system (EMS), said EMS capable of communicating with the DSL network

components using DSL network component communication protocols and standards.

8. **(Previously Presented)** The system as recited in claim 7, where said NMS accepts subscriber information from a service order management system (SOMS) for use in allocating, tracking, and managing said deterministic resource configuration variables for use when creating the virtual connections on said DSL network.

9. **(Canceled)**

10. **(Canceled)**

11. **(Currently Amended)** A method to optimize resources of DSL network providing DSL services comprising the acts of:

- (a) calculating, tracking, and storing configuration variables used in a deterministic provisioning of virtual connections on the DSL network; and
- (b) communicating the configuration variables to said DSL network to create said virtual connections[.]; and

(c) calculating a virtual circuit identifier (VCI) value, said VCI value being calculated using a plurality of DSL configuration data comprising any of connection position information, port information, and sequence position information, and wherein calculating said virtual circuit identifier (VCI) value further comprises

reverse engineering resource allocations using said VCI value to ascertain the configuration values of said DSL network components.

12. (Currently Amended) The method recited in claim 11, further comprising the act of creating, managing, and communicating deterministic configuration variables to cooperating DSL network components for the provisioning of resources.

13. (Canceled)

14. (Canceled)

15. (Previously Presented) The method recited in claim 11, wherein communicating the configuration variables to said DSL network includes coupling a network management system NMS to an element management system (EMS), said NMS cooperating with said EMS to communicate said configuration variables to cooperating DSL components.

16. (Currently Amended) A computer readable storage medium comprising computer-executable instructions for instructing a computer to perform the acts method recited in claim 11.

17. (Currently Amended) In a DSL network comprising a network management system (NMS), an element management system (EMS), at least one remote access

multiplexer (RAM), and at least one central office digital subscriber line access multiplexer, (CO DSLAM), a method to provision resources on said DSL network comprising ~~the steps of~~:

calculating deterministic configuration variables by said NMS; and
communicating said calculated deterministic configuration variables to said DSL network by said NMS using said EMS, said EMS being communicatively coupled to said RAM and CODSLAM.

18. (Currently Amended) The method recited in claim 17, wherein said calculating step further comprises ~~the step of~~ determining CO DSLAM configuration values for inclusion in calculating said deterministic configuration variables.

19. (Currently Amended) The method recited in claim 17, wherein said determining step further comprises ~~the steps of~~ communicating with said CO DSLAM by said NMS through said EMS to obtain said CON DSLAM configuration values.

20. (Currently Amended) The method recited in claim 17, wherein said calculating step further comprises ~~the steps of~~ determining a capacity of said RAM and said CO DSLAM to ascertain a range of values for said deterministic configuration variables, and choosing a formula associated with said determined capacity for use in calculating said deterministic configuration variables.

21. (Currently Amended) A computer readable storage medium comprising computer-executable instructions for instructing a computer to perform the ~~acts~~ method recited in claim 17.

22. (Currently Amended) In a DSL network having a digital subscriber line access multiplexer (DSLAM), a plurality of remote access multiplexers (RAMS) communicatively connected to said DSLAM, and a plurality of subscribers communicatively connected to said DSLAM by way of said plurality of RAMs, wherein each subscriber is identifiable at said DSLAM by a combination of a virtual circuit identifier (VCI) value and a virtual path identifier (VPI) value, a method of assigning VCI values to a subscriber comprising ~~the acts of:~~

- identifying a RAM to which said subscriber is connected;
- assigning a sequence number, n, to said RAM, said sequence number being based on a DSLAM input port position to which said RAM is connected;
- identifying a port on said RAM to which said subscriber is connected;
- assigning a position number, Mpos, to said RAM, said position number being in a range beginning with the number zero, said position number being based on the RAM input port to which said subscriber is connected;
- determining the number of ports, P, on said RAM;
- computing the value of $P*(n-1) + Mpos$; and
- assigning a VCI value for said subscriber based on the computed value.

23-27. (Canceled)

28. **(Previously Presented)** The system of claim 2, wherein the deterministic resource configuration variables further include a virtual path identifier (VPI) value, and the VPI and VCI values provide a unique identifier for a virtual connection between a subscriber and an associated Internet or Network Service Provider.

29. **(Previously Presented)** The system of claim 1, wherein the DSL network is an ADSL network.

30. **(Previously Presented)** The system of claim 1, wherein the virtual connection is a virtual circuit.

31. **(Previously Presented)** The system of claim 30, wherein the virtual circuit is a permanent virtual connection (PVC).

32. **(Previously Presented)** The method of claim 11, wherein the DSL network is an ADSL network.

33. **(Previously Presented)** The method of claim 11, wherein the virtual connection is a virtual circuit.

34. **(Previously Presented)** The method of claim 11, wherein the virtual circuit is a permanent virtual connection (PVC).

35. (Currently Amended) A method to optimize resources of DSL network providing DSL services comprising:

- (a) calculating, tracking, and storing configuration variables used in a deterministic provisioning of virtual connections on the DSL network;
- (b) communicating the configuration variables to said DSL network to create said virtual connections;
 - creating, managing, and communicating deterministic configuration variables to cooperating DSL network components for the provisioning of resources;
 - calculating a virtual circuit identifier (VCI) value, said VCI value being calculated using a plurality of DSL component configuration data comprising any of connection position information, port information, and sequence position information; and

~~The method of claim 13, further comprising~~ assigning a virtual path identifier (VPI) value, wherein the VPI value and the VCI values provide a unique identifier for a virtual connection between a subscriber and an associated Internet or Network Service Provider.